Proceedings of the Iowa Academy of Science

Volume 46 | Annual Issue Article 142

1939

The Time of Embryonic Determination of Sensoria and Antennal Color, and Their Relation to the Determination of Wings, Ocelli and Wing Muscles in Aphids

Karl A. Stiles
Coe College

author hopes is simpler than that in "Fresh Water Biology" by Ward and Whipple.

Iowa Lakeside Laboratory, and
Department of Zoology,
State University of Iowa,
Iowa City, Iowa.

EFFECTS OF X-RAYS ON THE EARLY DEVELOPMENT OF THE GRASSHOPPER

Titus C. Evans

Eggs of Melanoplus differentialis were irradiated with different dosages of X-rays on the first day of development. Effects were noted on the subsequent increase in number and kinds of cells, weight and rate of oxygen consumption.

Department of Zoology,
State University of Iowa,
Iowa City, Iowa.

THE TIME OF EMBRYONIC DETERMINATION OF SENSORIA AND ANTENNAL COLOR, AND THEIR RELATION TO THE DETERMINATION OF WINGS, OCELLI, AND WING MUSCLE IN APHIDS

Karl A. Stiles

Intermediate-winged aphids of the species Macrosiphum solanifolii were studied in an effort to determine the time of embryonic segregation of the sensoria and antennal color, and their relation to the determination of wings, ocelli, and wing muscle.

Dark antennal color and increased sensoria of winged aphids are considered to be characters closely correlated in development; for, in general, when there was a darkening of antennae, there was a corresponding increase in the number of sensoria. In practically all cases increased sensoria were correlated with a relatively large amount of nondegenerate wing muscle. It is concluded that embryonic determination of dark antennal color and increased sensoria takes place in a comparatively short period of time as compared with that of wings, ocelli, and wing muscle. The data make

it seem probable that while dark antennal color and extra sensoria, characteristic of winged aphid, are determined after wings, ocelli, and wing muscle, they complete their segregation before that of the latter group.

COE COLLEGE,
CEDAR RAPIDS, IOWA.

THE BIOLOGICAL ACTION OF ROTENONE ON LAKE FAUNA

HOWARD L. HAMILTON

The powdered root of *Derris elliptica*, which contains the alkaloid, rotenone, has long been used by the natives of tropical countries as a fish and arrow poison. Recently it has been introduced in this country as an insecticide, and is being used by conservation workers to remove rough fish from waters which are to be stocked with game fish. Little or no consideration has been given to the possibility that the poison might kill other members of a lake fauna (thus breaking the food chain) and seriously affect the survival of any fish with which the waters might be restocked. The purpose of the present investigation was to determine the effect of rotenone on various aquatic animals.

The paralyzing action of rotenone on the respiratory center in mammals is well known. Fish respond to the drug by swimming to the surface and gasping for air; the amount of air swallowed is soon sufficient to float them ventral side uppermost, and the animals writhe on the surface of the water in this position until death results from suffocation. The lethal concentration (that which produced death in at least twenty-four hours) for various animals is given below:

Animal	Lethal	Concentration
Buffalo (Ictiobus sp.)	1	6,000,000
Carp (Cyprinus carpis)	1	5,000,000
Leptodora kindti	1	2,000,000
Diaptomus	1	2,000,000
Daphnia	1	2,000,000
Bullheads (Ameiurus melas)	1	2,000,000
Argulus	1	2,000,000
Estheria	1	1,000,000
Rana pipiens	1	500,000
Ambystoma tigrinum	1	500,000
Leeches	1	500,000
Amphipods	1	100,000
Planaria	1	100,000